

Claims

1. A food processing surface cleaning system comprising:
a vacuum source;
a cleaning head, having walls defining a vacuum chamber in communication via a vacuum line with the vacuum source, the vacuum chamber having an open vacuum mouth; and
means for supplying a pressurised cleaning fluid via a fluid line to one or more cleaning fluid outlets within the vacuum chamber, the cleaning fluid outlets being directed to spray cleaning fluid towards the vacuum mouth;
whereby the vacuum mouth may in use be positioned near or against a food processing surface to allow sprayed cleaning fluid to contact the surface and be removed under vacuum via the vacuum line.
2. A food processing surface cleaning system wherein the cleaning fluid outlet(s) is/are configured to spray cleaning fluid towards substantially the entire extent of the vacuum mouth, such that the cleaning fluid washes the internal surfaces of the walls forming the vacuum chamber at the vacuum mouth.
3. A food processing surface cleaning system according to claim 1 or claim 2, wherein the food processing surface is a surface on which food is industrially and/or commercially processed.
4. A food processing surface cleaning system according to claim 3, wherein the food processing surface is in a food processing plant.
5. A food processing surface cleaning system according to

any preceding claim, wherein the food processing surface is a conveyor belt, butcher's block or sandwich processing area.

6. A food processing surface cleaning system according to claim 5, wherein the food processing surface is a conveyor belt and wherein the cleaning head is fixed in position during the cleaning operation, such that the conveyor belt moves past the cleaning head.

7. A food processing surface cleaning system according to any one of claims 1 to 5, wherein the cleaning head is movable.

8. A food processing surface cleaning system according to any preceding claim, wherein the food processing surface is a surface on which raw meat is processed.

9. A food processing surface cleaning system according to any preceding claim, wherein the cleaning fluid is generated by mixing hot water and steam.

10. A food processing surface cleaning system according to claim 9, wherein the cleaning fluid lacks other components.

11. A food processing surface cleaning system according to any preceding claim, wherein the temperature of the cleaning fluid is 71.5°C or higher.

12. A food processing surface cleaning system according to claim 11, wherein the temperature of the cleaning fluid in the cleaning fluid supply line and/or when leaving the cleaning fluid outlets is at least 75°C.

13. A food processing surface cleaning system according to any preceding claim, wherein the cleaning fluid pressure is in the range of 15 to 50 psi.
14. A food processing surface cleaning system according to any preceding claim, wherein the cleaning fluid flow rate is 5 to 50 gallons per hour.
15. A food processing surface cleaning system according to claim 14, wherein the cleaning fluid flow rate is 5 to 28 gallons per hour.
16. A food processing surface cleaning system according to any preceding claim, wherein the vacuum pressure is 5-12 inches of mercury.
17. A food processing surface cleaning system according to any preceding claim, wherein the air flow in the vacuum line is about 200 cubic feet per minute.
18. A food processing surface cleaning system according to any preceding claim, comprising a plurality of said cleaning heads, having respective cleaning fluid and vacuum steam lines.
19. A food processing surface cleaning system according to any preceding claim, wherein the cleaning head has a generally oblong vacuum mouth.
20. A food processing surface cleaning system according to any preceding claim, wherein the cleaning head has an elongate vacuum mouth.

21. A food processing surface cleaning system according to any preceding claim, wherein the cleaning fluid outlet is a fishtail nozzle or the cleaning fluid outlets are fishtail nozzles.

22. A food processing surface cleaning system according to any preceding claim, wherein the vacuum line is branched, different branches being in communication with the vacuum chamber at different points along the width of the vacuum mouth.

23. A food processing surface cleaning system according to any preceding claim, wherein the width of the vacuum mouth is at least 5 inches (about 12.5 cm).

24. A food processing surface cleaning system according to claim 23, wherein the width of the vacuum mouth is at least 8 inches (about 20 cm)

25. A food processing surface cleaning system according to any preceding claim, wherein the cleaning head has a plurality of cleaning fluid outlets.

26. A food processing surface cleaning system according to claim 25, wherein the cleaning fluid outlets are arranged generally in a line across substantially the entire width of the vacuum chamber.

27. A food processing surface cleaning system according to any preceding claim, wherein the food processing surface is a conveyor belt and wherein the cleaning head is positioned at a bend in a conveyor belt.

28. A food processing surface cleaning system according to claim 27, wherein the cleaning head is positioned where the slats of the conveyor are maximally separated.

29. A food processing surface cleaning system according to any preceding claim, wherein the food processing system is a conveyor belt having through-holes, and wherein the system comprises an air blower with an air-blowing mouth of dimensions similar to those of the vacuum mouth, the vacuum mouth and air blowing mouth being aligned with the belt running therebetween.

29. A food processing surface cleaning system according to any preceding claim, wherein the food processing system is a conveyor belt and wherein separate cleaning heads are provided for respective surfaces of the belt.

30. A method of cleaning a food processing surface, the method comprising:

providing a food processing surface cleaning system according to any preceding claim, with the vacuum mouth positioned near or against a food processing surface to be cleaned; and

adjusting the pressure under which the cleaning fluid is supplied, and the vacuum pressure and/or airflow in the vacuum line, such that sprayed cleaning fluid contacts the food processing surface and is substantially entirely removed via the vacuum line.

31. A method according to claim 30, wherein at least 80% of the sprayed cleaning fluid is removed via the vacuum line.

32. A method according to claim 31, wherein at least 95% of

the sprayed cleaning fluid is removed via the vacuum line.

33. The use of a food processing surface cleaning system as defined in any one of claims 1 to 29 to clean a food processing surface.